Operating Guidance

Healthy Home Rating System – Operating Guidance

Department of Housing and Urban Development
Office of Healthy Homes and Lead Hazard Control

Department of Housing and Urban Development

Operating Guidance – Healthy Home Rating System

Table of Contents

Arrangement of the Guidance

[1] Annex C and D are incorporated from the UK's HHSRS Operating Guidance (originally as Annex D and Annex E) – original page numbering is retained.

CHAPTER 1
Introduction and Background

1.01. The Healthy Home Rating System (HHRS) is not in itself a standard; rather, it is a system of assessment. This document provides guidance on the technical aspects of the HHRS assessment in this context.

1.02. The HHRS is founded on the logical evaluation of both the likelihood of an occurrence that could cause harm, and the probable severity of the outcomes of such an occurrence. It relies on the informed professional judgments of both of these to provide a simple means of representing the severity of any dangers present in a dwelling.

1.03. The Rating System is concerned with the assessment of hazards and the potential effect of conditions. While the HHRS can be used to judge the effectiveness of remedial action, it cannot determine or suggest that action – that is a matter for judgment depending on the particular circumstances, including the design and construction of the dwelling.

1.04. The HHRS is evidence-based. It is supported by extensive reviews of the literature and by detailed analyses of statistical data on the impact of housing conditions on health. This evidence is summarized in the Hazard Profiles section of this Guidance and these are intended to inform professional judgment.

1.05. The assessment using the HHRS is made based on the condition of the whole dwelling. This means that, before such an assessment can be made, a thorough inspection of the dwelling must be carried out to collect the evidence of the condition.

1.06. While this does not involve a new approach to the inspection of dwellings, it does require an understanding and appreciation of the potential effects that could result from conditions and deficiencies that should have been identified during the inspection.

1.07. The HHRS concentrates on threats to health and safety. It is generally not concerned with matters of quality, comfort and convenience. However, in some cases, such matters could also have an impact on a person's physical or mental health or safety and so can be considered. Also, as the Rating System is about the assessment of hazards (the potential effect of conditions), the form of construction and the type and age of the dwelling do not directly affect an assessment. However, these matters will be relevant to determining the cause of any problem and so indicate the nature of any remedial action.

1.08. Note – Research on the relationship between housing and health is a continuing process, and it is the responsibility of professionals using the HHRS to keep up-to-date on current evidence.

The Background to the Healthy Home Rating System

The Theory Behind the HHRS

1.09. The HHRS (HHRS) is an American adaptation of the British Housing Health and Safety Rating System. The HHRSR was developed to allow assessment of all the main potential housing related health and safety hazards. By focusing on potential hazards, it places the emphasis directly on the risk to health or safety, rather than cosmetic or physical conditions alone. As such, there is significant overlap between the two approaches and the HHRS utilizes the vast housing and health data that forms the basis for the HHSRS in the United Kingdom. The rationale for this "borrowing" is due to the fact that the United States lacks key data connecting housing and health outcomes. Until such a time as the United States develops a comprehensive data set, the HHSRS provides reliable "point-of reference" data for our use.

1.10. As the range of potential housing hazards have differing characteristics, the Rating System uses a formula to generate a numerical score that allows comparison of the full range of hazards. This, together with the simple but logical approach of assessing both the likelihood and harm outcome allows the comparison of highly likely minor hazards and very unlikely major ones. Whatever the hazard, the higher the score - the greater the risk.

1.11. Development of the British HHSRS was carried out over several years. As well as those directly involved with the development, there was considerable input, advice and evaluation of the underlying principles of the Rating System from a wide range of experts, including experts in risk assessment, housing, environmental health, and risks in buildings. This development involved wide ranging testing of both the theory and the practical application.

1.12. The concept was originally proposed in 1998. Over the following years several options for the approach to assessment and scoring were tried and tested, and the most consistent and robust was finalized and released in July 2000.

1.13. During this time, the underlying principles and the assessment formula were shown to be sound. Between July 2000 and January 2003, the statistical evidence that supports the HHSRS and informs judgments, was refined and updated, the reaction of practitioners to the most recent version was evaluated, and the application of the system in dwellings in multi-occupied buildings reviewed. The HHRS follows the same principles and judgments and relies upon the same statistical data.

1.14. The principles and approach developed remain unchanged. However, this guidance uses the refined and updated statistical evidence, and takes account of the findings from the evaluation and multi-occupied buildings studies. It also incorporates information unique to the United States context.

The Principle Underlying the HHRS

1.15. The underlying principle of the HHRS is that – **Any residential premises should provide a safe and healthy environment for any potential occupant or visitor.**

1.16. To satisfy this principle, a dwelling should be designed, constructed and maintained with non-hazardous materials and should be free from both unnecessary and avoidable hazards.

1.17. Some hazards, however, are necessary or unavoidable, and others are considered desirable or expected because the perceived benefits outweigh the risks. For example, electricity is hazardous but considered necessary; stairs (however well designed) are hazardous but necessary in any multi-storey dwelling. For such hazards, the design, construction and maintenance should be such as to reduce to a minimum the probability of an occurrence that could result in harm and of the potential harm that could result.

1.18. It is a general principle that any dwelling should provide adequate protection from all potential hazards prevailing in the local external environment. This includes the normal local weather conditions, ground conditions and pollution (including noise, air and radiation).

1.19. Where the dwelling is a part of a larger structure, the design, construction and maintenance of that larger structure should provide adequate protection from all potential hazards. As well as potential hazards from the external environment, this includes those prevailing in the internal environment outside the dwelling, including the normal noise pollution.

1.20. This approach acknowledges that all dwellings will contain some hazards, and that the degree to which the underlying HHRS principle can be satisfied in existing dwellings will vary. The HHRS provides a means of assessing dwellings which reflects the risk from any hazard, and allows a judgment to be made as to whether that risk, in the particular circumstances, is acceptable or not.

1.21. For the purposes of the HHRS, the assessment is solely about the risks to health and safety. The feasibility, cost or extent of any remedial action is irrelevant to the assessment. Some deficiencies, such as a broken stair tread or a leaking pipe, may be quickly, easily and cheaply remedied, but while such deficiencies are present, the threat to health or safety can be considerable.

1.22. **Note** – While the Rating System focuses on the existing potential effect of any deficiencies on health and safety, any inspection should not overlook any other deficiencies that do not currently contribute to hazards. Such deficiencies may have other implications, such as interference with the aesthetic or general quality, the convenience, the comfort of occupants and visitors, or, if left to deteriorate, could contribute to hazards in the future. Other powers or actions can often be used to deal with such deficiencies.

CHAPTER 2
Terminology, and Extent and Purpose of the Guidance

Glossary

Certain words and phrases have particular meanings when used in connection with the HHRS. To assist in the correct understanding and application of the HHRS the definitions of these words and phrases for the purpose of this Guidance are given below.

Deficiency

2.01 This is a failure of an element to meet the Ideal, as defined below. The failure could be inherent, such as a result of the original design, construction or manufacture, or it could be a result of deterioration, disrepair or a lack of repair or maintenance.

Dwelling

2.02 For the purposes of an assessment, a **dwelling** is any form of accommodation that is used for human habitation, or intended or available for such use. It includes:

(a) what is commonly known as a "house", whether it is detached, semi-detached or terraced;
(b) what is commonly known as an "apartment", "flat", or "efficiency" that is a self-contained dwelling on one or more floors in a building containing other dwellings or other types of accommodation (e.g. shops or offices); and
(c) what may be known as an "efficiency", "dormitory", or other type unit that is not self-contained, and where there is the shared use with other dwellings of some facilities such as a bath or shower-room, sanitary accommodation, or kitchen.

2.03 Included as part of the dwelling are:

(a) any paths, yards, gardens, and outbuildings etc that are associated or for use with, or give access to that dwelling, whether or not they are for the exclusive use of that dwelling, or are shared with other dwellings; and
(b) any rights of way, easements, and common or shared parts and services necessary for the occupation and use of the dwelling, for example non-adopted footpaths, drives, and drains or private sewers.

2.04 Where the dwelling is an apartment, secondary suite (e.g., in-law suite) or other self-contained living accommodation occupying two floors of a larger house and having its own outside entrance, or a single room occupancy (SRO) or rooming house, as well as including those means of access, amenities and services mentioned above, the dwelling also includes any rooms, passageways, circulation areas, and facilities that are shared or used in common with others, and the common structural elements, such as the roof, walls and foundations. This applies whether or not the flat or SRO is self-contained.

Element

2.05 Any component or constituent part, facility or amenity of a dwelling. For example, a wall, a window, a staircase, a bath, means of lighting, and means of space heating are all 'elements' for the purposes of the HHRS.

Harm and Class of Harm

2.06 Harm is an adverse physical or mental effect on the health of a person. It includes, for example, physical injury, and illness, condition, or symptom whether physical or mental. It also includes both permanent and temporary harm.

2.07 For the purposes of the HHRS, the possible Harms that may result from an occurrence are categorized according to their perceived severity into four Classes of Harm. These are harms of sufficient severity that they will either prove fatal or require medical attention and, therefore, be recorded in hospital admissions or medical records. (Examples for each Class of Harm are given in Annex B).

Hazard

2.08 Any risk of harm to the health or safety of an actual or potential occupant that arises from a deficiency. In some cases, as well as being a hazard in its own right, a hazard may increase the likelihood of an occurrence of, or the severity of harm likely to result from another hazard.

Hazard Score and Rating

2.09 The Hazard Score is a numerical representation of the overall risk from a hazard. It is based on the evaluation of the likelihood of an occurrence and of the probable spread of harms that could result.

2.10 Note –The application of the HHRS for assessing conditions in some forms of dwellings involves some changes from the standard approach described below. Supplemental Guidance and advice is given for the assessment in such cases in Chapter 5. This supplemental Guidance is particularly relevant for:

i. dwellings that are part of a larger building (i.e. flats etc – above);
ii. those which are not self-contained (i.e. SROs etc – above); and
iii. premises such as halls of residence, hostels and so-called “bed and breakfast” accommodation.

2.11 The Hazard Rating is the Band into which the Hazard Score falls[5].

Health

2.12 This is an individual’s state of physical, mental and social wellbeing. It is not limited to the presence or absence of disease, infirmity or physical injury, but includes psychological injuries and distress.

HHRS Formula

2.13 This is the Formula used to calculate the Hazard Score using representative scale points to denote likelihood and spread of outcomes judgments.

Ideal

2.14 The perceived optimum standard, at the time of the assessment, intended to prevent, avoid or minimize the hazard.

Likelihood

2.15 The probability of an occurrence that could cause harm. For the purposes of the Healthy Home

Rating System, this is the probability of an occurrence during the twelve months following the assessment.

Location

2.16 This is a site or several sites in or associated with a dwelling where the presence of a particular hazard would threaten the health or safety of an occupant or potential occupant. For the assessment following an inspection, the same hazard may exist at more than one location. For example, there may be more than one set of stairs or steps at a dwelling, each set contributing to the hazard of Falling on Stairs etc[7].

Occurrence

2.17 This is an event or period of time exposing an individual to a hazard.

Representative Scale Points

2.18 These are used in the HHRS Formula to denote the judgments made of the likelihood and the spread of outcomes.

2.19 Note – As it is the perceived optimum prevailing at the time of assessment, this will change, and it is the responsibility of those using the HHRS to keep up-to-date on what it the Ideal. For a discussion on assessing hazards existing in more than one location, see paras 3.16 and 3.22.

2.20 A set of standard ranges of ratios is given for the likelihood and standard ranges of percentages for the spread of outcomes. For each of these ranges a representative scale point is used in the Formula.

2.21 The likelihood scale is based on the logarithmic scale of 10 to root 4. The standard ranges have been calculated by the logarithmic scale of 10 to root 8 (x 1.3335), the alternate rounded values of which give the 16 single Representative Scale Points used in the HHRS calculation.

2.22 The lower points of the outcome scales are based on the logarithmic scale of 10 to root 3 and the upper points on the scale of 10 to root 6, and the Representative Range Points used in the HHRS Hazard Formula are given by the logarithmic scales of 10 to root 6 (x 1.4678) and 10 to root 12 (x 1.2115) respectively, and the figures then rounded.

Risk

2.23 The combination of the likelihood of an occurrence and the spread of harms resulting during the following twelve-month period. For the purposes of the HHRS this is expressed as the Hazard Score or Hazard Rating.

Spread of Harms

2.24 The range of possible harm outcomes (i.e. Classes of Harm) that could result from an occurrence. For the HHRS, this is expressed numerically as a set of percentages indicating the relative possibility of each Class of Harm as assessed from data sources.

Vulnerable Group

2.25 A range of people for whom the risk arising from a hazard is greater than for any other age group in

the population. Where there is no vulnerable group for a specific hazard, the population is taken as a whole.

2.26 Vulnerability to particular hazards is restricted to age groups. It does not extend to vulnerability for other reasons.

Responsibility for Deficiencies and Hazards

2.27 Hazards in dwellings can result from:

(a) deficiencies solely attributable to the design, construction and/or maintenance of the dwelling;
(b) deficiencies solely attributable to the behavior of the occupants or neighbors; and
(c) deficiencies which are attributable to both the dwelling and the occupants or neighbors.

An occupant in a vulnerable group, where applicable, is referred to as a "relevant occupant".

2.28 The HHRS provides a means of assessing the dwelling. It is, therefore, concerned only with those deficiencies that can be attributable solely or partly to the design, construction and/or maintenance of the dwelling, and takes into consideration occupant use as appropriate. This assessment is of the dwelling disregarding the current occupants (if any), and based on the potential effect of any hazards on a member of the relevant vulnerable age group. This is important and means that the assessment will not be affected by a change of occupant, and that an unoccupied dwelling can be assessed.

CHAPTER 3
Overview of Rating Hazards

3.01 The HHRS uses judgments made by the inspector, based on an inspection of the whole dwelling, to generate a numerical score. The information observed during the inspection should be properly and accurately recorded as this will provide evidence to justify and support the judgments that form the basis of the numerical Hazard Score.

3.02 The Rating System assessment procedure requires for each hazard, two judgments from the inspector. These are an assessment of:

(a) the likelihood, over the next twelve months, of an occurrence that could result in harm to a member of the vulnerable group; and
(b) the range of potential outcomes from such an occurrence.

3.03 This approach is more logical than merely attempting to judge the severity of the hazard on a linear scale[14]. It ensures that the severity of a threat which is very likely to occur but will result in a minor outcome can be compared with one which is highly unlikely to occur but if it did would have a major outcome. It also allows differentiation between similar hazards where the likelihood may be the same, but the outcome very different (see Box 1).

BOX 1 - Similar Hazards, with Differing Outcomes

Example –
There is a window with a low internal sill (about 250mm above the floor) and with a loose, easy to open catch to the large side hung opening light. A small child could climb onto the sill and open the window relatively easily, and, once there could fall out through the open window. The likelihood of this occurring over the next twelve months is judged to be around 1 in 180.

If that window is in the bedroom of a flat on the ground floor, with grass immediately below, the outcome would be relatively minor – 99% Class IV (bruising) and perhaps 1% Class III (a strain or sprain). This would give a Hazard Score of 7 (Band J).

However, if that same window is in the bedroom of a flat on the 2nd floor, with a paved area immediately below, the outcome would be major – 10% Class I (paralysis or even death), 80% Class II (serious fractures) and 10% Class III (a strain or sprain). In this case, with the same likelihood of 1 in 180, the Hazard Score would be 1,016 (Band C).

Although in both cases the likelihood is the same, the Hazard Score reflects the dramatically different outcome.

Note - The term “inspector” used in this Guidance includes an environmental health practitioner or other local authority officer.

3.04 Using these two judgments, the HHRS Formula is used to generate the numerical Hazard Score for each of the hazards. The Formula and the use of numbers to represent the inspector’s judgments

provide the means to compare very different hazards. It is this approach which enables hazards that have a slow and insidious effect to be compared with ones where the effect is relatively instantaneous; and enable hazards which may result in physical injury to be compared with ones which could cause illnesses or affect mental health.

The HHRS Formula

3.05 Three sets of figures are used to generate a Hazard Score, these are:

(a) a weighting for each Class of Harm[2] reflecting the degree of incapacity to the victim resulting from the occurrence;

(b) the likelihood of an occurrence involving a member of a vulnerable group, expressed as a ratio; and

(c) the spread of possible harms resulting from an occurrence, expressed by percentage for each of the four Classes of Harm.

3.06 The first of these, the weighting given to each Class of Harms, remains fixed and is shown in Table 1.[3] This built-in fixed weighting means that, given the same likelihood, those hazards that cannot result in death (e.g. risks from the position and operability of amenities etc) will not produce a Score as high as those that may cause death (e.g. risks from carbon monoxide).

Table 1. Weighting for Classes of Harm

Class of Harm	Weighting
I Extreme	10,000
II Severe	1,000
III Serious	300
IV Moderate	10

3.07 The other two sets of figures represent the informed professional judgments made by the inspector of the likelihood and of the potential spread of harms.

3.08 The Hazard Score is calculated as the sum of the products of the weightings for each Class of Harm which could result from the particular hazard, multiplied by the likelihood of an occurrence, and multiplied by the set of percentages showing the spread of Harms. (See Figure 1.)

[2] See paras 2.09-2.11 above, for the interpretation of these terms, and Annex B for Examples for each Class.

[3] The Classes of harm and the weightings are based on those proposed in *A Risk Assessment Procedure for Health and Safety in Buildings* (2000) CRC, London.

Figure 1. The HHRS Scoring Formula

Class of Harm Weighting				Likelihood		Spread of Harm (%)
SI	=	10,000	X	1/L	X	O1
SII	=	1,000	X	1/L	X	O2
SIII	=	300	X	1/L	X	O3
SIV	=	10	X	1/L	X	O4

Hazard Score = (S1+S2+S3+S4)

Where –
L = the Likelihood of an occurrence
O = the Outcome expressed as a percentage for each Class of Harm
S = the row product for each Class of Harm.

3.09 General advice and guidance on assessing the likelihood and outcomes is given in the following paragraphs. More specific guidance on assessments for each individual hazard is given in the Hazard Profiles.

Judging the Likelihood

3.10 The inspector judges the likelihood of an occurrence over the next twelve months that could result in harm to a member of the relevant vulnerable group. For the HHRS, the judgment is limited to the likelihood of an occurrence resulting in outcomes that would or should require some medical attention – a visit to a doctor or a hospital. This is because the Rating System deals only with those hazards that could cause significant harm outcomes (and so carry a significant Class of Harm weighting). It is only these outcomes for which there are recorded data to inform the judgment.[4]

3.11 The judgment of the likelihood made by the inspector involves taking account of the conditions (deficiencies) identified during the inspection, in particular whether those conditions will increase or reduce the average likelihood of an occurrence.

3.12 Thus, the inspector should assess the likelihood having regard to:

(a) the average likelihood given for the particular type and age of dwelling;
(b) the dwelling characteristics and conditions identified during the inspection, which are the responsibility of the landlord, and which:
  i. may increase the likelihood of an occurrence; and
  ii. those which may reduce the likelihood of such an occurrence. (See Box 2.)

BOX 2. Judging the Likelihood

Example –
For *falls on stairs*, the inspector determines the likelihood of a fall occurring over the following twelve months that could result in a Class I to IV Harm to a member of the vulnerable age group. This involves taking account of such matters as the going, the presence or absence of handrails, the state of repair of the treads, variations in tread or riser dimensions, and the available lighting.

[4] It is this data that has been used to calculate the statistical evidence for each Hazard.

Box 2. Continued.

For *dampness and mould growth etc*, the inspector determines the likelihood of the dampness causing Class I to IV Harm to a member of the vulnerable age group over the next twelve month period, taking into account the extent and degree of the dampness and its location in the dwelling.

3.13 To inform the inspector's judgment, national UK average likelihoods of an occurrence involving a person in the vulnerable age group are given in the Hazard Profiles (see Annex C).[5] Where data is available, these are given for different age groups and types of dwellings. These averages represent the likelihood for the typical condition that could be expected in a dwelling of that particular age and type. Also provided in the Hazard profiles is guidance on dwelling characteristics that may affect the likelihood of an occurrence.

3.14 Assessing likelihood is not determining or predicting that there definitely will be an occurrence. Even where it is judged that there is a very high likelihood, such as a 1 in 10 probability, it is accepting that the likelihood of no occurrence is nine times greater than that of an occurrence.

3.15 The inspector is not expected to give an exact likelihood ratio, but to select one of the standard HHRS likelihood ranges – e.g., the range of 1 in 24 to 1 in 42; or the range of 1 in 420 to 1 in 750. For each of the standard ranges a representative scale point is used in the Hazard Rating Formula to calculate the Hazard Score. See Box 3 for the standard HHRS ranges of likelihoods, and the Representative Scale Points of those ranges that is used in the Hazard Rating Formula.[6]

Box 3. HHRS Standard Range of Likelihoods –

			Representative Scale Point
Less likely than		1 in 4,200	5,600
1 in 4,200	to	1 in 2,400	3,200
2,400	to	1,300	1,800
1,300	to	750	1,000
750	to	420	560
420	to	240	320
240	to	130	180
130	to	75	100
75	to	42	56
42	to	24	32
24	to	13	18
13	to	7.5	10
7.5	to	4	6
4	to	2.5	3
2.5	to	1.5	2
More likely than		1 in 1.5	1

The inspector judges the range for the likelihood. The HHRS Hazard uses scale points to represent that range.

[5] Note that these are national averages for the UK, which may differ from local US averages.

[6] An explanation of the calculation of the standard ranges and the Representation Scale Points is given in paras. 2.24-2.27.

3.16 Some hazards may be present in several locations. However, the inspector judges the likelihood range for the dwelling as a whole. Falls on the level, for example, will include reviewing the condition of all the floors within the dwelling and all the paths and yards associated with the dwelling. Damp and mould growth will involve reviewing the extent and severity of the dampness and any mould growth in all rooms within the dwelling. For these, the inspector should assess the collective likelihood of an occurrence at the dwelling as a whole. This should take into account all the factors associated with the use of each location and how that may affect the exposure to that particular hazard at the dwelling as a whole. (See Box 4.)

BOX 4. Assessing the Likelihood for Falls associated with stairs

Example –
There are three sets of steps and stairs to a house:
1. At the front gate there are two steps. These are of rough concrete and have high risers. There is a crude loose handrail to one side.
2. At the front door there are four steps of smooth concrete. The bottom step is higher than the others. There is a steel tube handrail to one side.
3. The internal stairs have two winders at the top. The stairs are fairly steep, but not more than the average for this type of dwelling (a 1930s, detached house) and there is a handrail to one side.

The main stairs are assessed as giving the same likelihood of a major fall as the average for inter-war houses (i.e. around 1 in 230). However, the state and condition of the steps at the gate and to the front door – particularly dangerous in icy weather and at night – is judged to substantially increase the overall probability that, in the next twelve months, an elderly person (60 years or more) will have a fall that could result in some injury. While the occupants may use the rear door (with only a single low step), they cannot avoid using the steps close to the front gate. In this case, the likelihood of a member of the vulnerable age group falling in the next twelve months is judged to be in the range of 1 in 24 to 1 in 13 – a Representative Scale Point of 1 in 18.

Judging the Spread of Harm outcomes

3.17 After judging the likelihood of an occurrence, the inspector makes the second judgment, that of the possible harm outcomes for the vulnerable age group that could result from such an occurrence. This is done by assessing the range of outcomes, under the four classes of harm. The most likely outcome would be decided upon first, and then other possible outcomes using the representative scale points for those other outcomes. This would mean that the percentage for the most likely outcome would be 100% minus the percentage sum of the representative scale points for any other outcomes.

3.18 National average spreads of harm outcomes for each hazard, although from the UK, are given in the Hazard Profiles (see Annex C). The choice to include UK averages was made owing to the similar outcomes that would be anticipated in the US for similar types of conditions. Where data is available, these are given for different age groups and types of dwellings. The electronic tool simplifies this data for the inspector. As with the average likelihoods, these represent the harm outcomes for the typical condition that could be expected in a dwelling of that particular age and

type. Local conditions may reveal different averages, which the inspector will take into account when scoring the hazard(s). Also given in the Hazard Profiles is guidance on dwelling characteristics that may affect the outcomes.

3.19 The spread of outcomes should be assessed having regard to: (a) the average spread of harm outcomes given for the particular type and age of dwelling; (b) the dwelling characteristics and conditions identified during the inspection which are the responsibility of the landlord, and which: i may increase the severity of those outcomes; and ii those which may mitigate the severity of those outcomes.

3.20 As for likelihood, the inspector is not expected to give an exact spread of outcomes, but select one of the standard HHRS outcome ranges. For each of the standard ranges there is a representative scale point that is used in the Hazard Rating Formula. See Box 5 for the standard HHRS ranges of outcomes and for the Representative Scale Points used in the Formula to generate the Hazard Score.

BOX 5. HHRT Standard Range of Class of Harm Outcomes –

			Representative Scale Point
Below		0.05%	0%
0.05%	to	0.15%	0.1%
0.15%	to	0.3%	0.2%
0.3%	to	0.7%	0.5%
0.7%	to	1.5%	1%
1.5%	to	3%	2.2%
3%	to	7%	4.6%
7%	to	15%	10%
15%	to	26%	21.5%
26%	to	38%	31.6%
Above		38%	46.4%

3.21 As the spread of outcomes is given as percentages, the total must, obviously, equal 100. For example, using the Paper Scoring Form (see Annex B), the inspector should select the representative scale points for three of the Classes of Harm, and the fourth Class, the most likely Class to occur, should be 100 minus the sum of the other three Classes. (This calculation is made automatically by the HHRS scoring programs.)

3.22 For those hazards which may be present in several locations, the inspector should take account of the state, condition and other factors related to each location and how that might affect the likelihood of an occurrence and so increase or lessen the overall possible severity of the range of harm outcomes. (See Box 6.)

BOX 6. Assessing the Outcomes for Falls associated with stairs

Example –

Using the same example as above, a house with three sets of steps and stairs –
1. At the front gate there are two steps. These are of rough concrete and have high risers. There is a crude loose handrail to one side.
2. At the front door there are four steps of smooth concrete. The bottom step is higher than the others. There is a steel tube handrail to one side.
3. The internal stairs have two winders at the top. The stairs are fairly steep, but not more than the average for this type of dwelling (a 1930s, detached house) and there is a handrail to one side.

There is nothing to suggest that the outcomes from a fall on the internal stairs will be anything other than average (i.e. 2.1%, 7.4%, 20.5% and 70.0% for Classes I, II, III, and IV respectively). However, the state and condition of the steps to the front door steps and those near the front gate, are such that it is judged that the Class I outcome to a person aged 60 years or more from a fall at either of these locations will be increased, particularly if that fall was in cold weather or at night. The Representative Scale Points of the outcomes are judged to be 4.6%, 10.00%, 21.5% and 63.8% respectively.

Generating a Hazard Score

3.23 Using the same falls associated with stairs example as given in Box 6 above, the Likelihood of 1 in 18 and the Outcomes of 4.5%, 10.0%, 21.5% and 63.8% for Classes of Harm I to IV respectively are used by the HHRS Formula to generate a Hazard Score of 3,505 (See Box 7).

BOX 7. Generating a Hazard Score

Class of Harm Weighting			Likelihood		Spread of Harm (%)		Score
Class I	10,000	X	1/18	X	4.6	=	2,556
Class II	1,000	X	1/18	X	10.0	=	556
Class III	300	X	1 /18	X	21.5	=	358
Class IV	10	X	1/18	X	63.8	=	35
					Hazard Score	**=**	**3,505**

3.24 Average Hazard Scores for each hazard are given in the Hazard Profiles (see Annex C), and, where data is available, for different age groups and types of dwellings. These have been calculated using the Hazard Rating Formula and the average likelihoods and outcomes.

The Hazard Bands

3.25 The numerical Hazard Score can appear too specific. It can also falsely imply that the score is a precise statement of the risk, rather than a representation of the inspector's judgment.

3.26 Hazard Bands have been devised to avoid emphasis being placed on what may appear to be a precise numerical Hazard Score. These also provide a simple means for handling the potentially wide range of Scores – from under 0.2 to 1,000,000[7]. There are ten Hazard Bands (see Box 8), with Band J being the safest, and Band A being the most dangerous.

3.27 The Hazard Band is the first factor to be taken into account in determining the appropriate enforcement action – for guidance on which, see the Enforcement Guidance.

BOX 8. HHRT Bands – Band Hazard Score Range

Band	Score
A	5,000 or more
B	2,000 to 4,999
C	1,000 to 1,999
D	500 to 999
E	200 to 499
F	100 to 199
G	50 to 99
H	20 to 49
I	10 to 19
J	9 or less

[7] A "1 in 5,600" likelihood with 100% Class IV outcome, and a "1 in 1" likelihood of 100% Class I outcome respectively.

CHAPTER 4
The Assessment of Conditions Using the HHRS

4.01. Once the inspection has been completed, the inspector makes the assessment. This involves:
- (a) determining whether there are any deficiencies present by assessing whether each dwelling element and the dwelling as a whole meets the relevant Ideal;
- (b) determining whether any deficiencies contribute to one or more hazards, and if so, which hazards; and
- (c) for each hazard which is obviously worse than average for that type and age of property, the inspector assesses:
  - i) the likelihood of an occurrence over the next twelve months; and
  - ii) the probable spread of harms which could result from such an occurrence.

The Inspection Procedure

4.02. An inspection is, of course, a means of gathering information on which to base decisions. As those decisions could result in enforcement action, the inspection should be thorough and comprehensive. The observations and findings from the survey should be accurately recorded and stored for future reference, particularly as they may be needed to substantiate the judgments made and justify decisions taken which may affect someone's home and someone's property.

4.03. For the purposes of assessment using the Rating System, the inspection should be detailed enough to gather all the necessary information on the state and condition of a dwelling, and particularly on any deficiencies. As with all inspections, a simple logical approach should be adopted to ensure all internal and external parts of the dwelling are inspected. For local authority officers, such inspections generally will be restricted to visual and surface inspection, without any destructive investigations and limited by furniture and furnishings.

Assessing the Condition

Linking Deficiencies and Hazards

4.04. The first stage in assessing the condition of a dwelling is a review of the deficiencies identified during the inspection.

4.05. As defined above (paras 2.02-2-03) for the purposes of the HHRS, a deficiency is a failure of an element to meet the Ideal, whether that failure is inherent, such as a result of the original construction or manufacture, or a result of deterioration or of disrepair and a lack of maintenance. While a deficiency may have implications in building and aesthetic terms, for the purposes of the HHRS its prime importance is whether the effect from that deficiency has the potential to cause harm – i.e. when the deficiency results in a hazard (see paras 2.12-2.13).

4.06. A single deficiency may contribute, to differing degrees, to more than one hazard. For example, the single deficiency of disrepair to a ceiling could, dependent upon the nature and extent of that disrepair, lead to the following hazards:

- excessive cold (through increased heat loss);
- fire (by allowing fire and smoke to spread to other parts of the dwelling);
- lead (from old paint);
- infections from other sources (by providing means of access and harborage for pests); and
- noise (because of an increase in noise penetration between rooms).

The contribution a single deficiency makes to each hazard will vary, perhaps from the relatively insignificant to the substantial.

4.07. Similarly, several deficiencies may contribute to the same hazard. Disrepair to a ceiling, an ill-fitting door, and the lack of a smoke detector may all contribute to the hazard of fire, as each could lead to smoke and flames spreading to other parts of the dwelling without means of detection and warning.

4.08. Finally, there may be similar deficiencies in various locations throughout the dwelling which all contribute to the same hazard. There may be, for example, dampness affecting walls to several rooms and areas within the dwelling. It is the cumulative contribution of those deficiencies to the hazard of damp and mould growth that should be assessed. Similarly, there may be deficiencies to steps to the entrance path to the dwelling, deficiencies to the main stairs within the dwelling and deficiencies to the rear doorsteps. It is the cumulative contribution of these deficiencies to the hazard of falls associated with stairs/steps that is assessed.

4.09. Guidance on the matters to be taken into account in assessing the potential contribution to a hazard by a deficiency is given in the Causes and the *Preventive Measures* and the *Ideal* sections of the Hazard Profiles in Annex C. However over time research may be published that will overtake the evidence used in the profiles.

Note – It is imperative that users of the Rating System keep up to date with published research and other relevant information which can be used to supplement that given in the Hazard Profiles (Annex C) and which may influence their judgment as to likelihood and/or spread of harms.

Identifying Hazards

4.10. Identifying and assessing hazards involves an understanding of the basic physiological and psychological requirements for human life, and of the functions of a dwelling as a whole and of each individual dwelling element.

4.11. As a minimum, a dwelling should be capable of satisfying the basic and fundamental needs for the everyday life of a household. It should provide shelter, space and facilities for the occupants. And, it should be suitable for the spectrum of households and individuals who could normally be expected to occupy a dwelling of that size and type.

4.12. As well as satisfying the general principle behind the Rating System (see paras 1.12- 1.18), the dwelling should not contain any deficiencies and consequential hazards that interfere with the household establishing a home or which might endanger the occupants and any potential occupants.

4.13. Determining whether a deficiency contributes to one or more hazards also requires an understanding on the part of the inspector of the function(s) of each element and facility, and

competence in assessing how the deficiency interferes with a function so as to create a hazard. (See Box 9 for some examples of the functions of individual elements.)

BOX 9. FUNCTIONS AND REQUIREMENTS OF ELEMENTS – SOME EXAMPLES

Doors – External doors provide for access into and out of the dwelling or building, and also complete the weather protection, privacy and security provided by the external structure. They should be close fitting when closed, provided with appropriate door furniture so as to be capable of being readily opened and closed and secured against unauthorized entry.

Internal doors allow for access between different parts of the dwelling. When closed, they complete the separation provided by the internal walls, and provide for privacy by separating a room (such as a bathroom and a bedroom) from other parts of the dwelling. As well as being able to be readily opened and closed, internal doors should satisfy similar functions to the internal walls, such as sound insulation and limiting the spread of fire.

Walls – In traditionally built dwellings, the external walls will provide for support for floors and the roof. They also give weather protection, thermal and sound insulation and limit the spread of fire.

Internal walls divide the dwelling into separate rooms and areas, enabling different activities to be carried out. They also provide for privacy for individual members of a household allowing personal and domestic activities to be carried out in proper conditions and in private. Internal walls may provide support for other elements and should give thermal and sound insulation and should limit the spread of fire. The surfaces of internal walls should be capable of being decorated and easily maintained in a clean condition; this is especially so in such areas as kitchens and bathrooms where hygiene is of particular importance.

Paths, Yards etc – External paths, yards, and steps should be laid so as to be even and self-draining. This includes paths giving access from public or shared areas, and those giving access to amenity spaces.

Rainwater Goods – Eaves/gutters are intended to collect rainwater draining off roofs and carry it safely to rainwater pipes, which in turn should carry it safely to a drainage inlet.

Kitchens – These are primarily food preparation areas. All surfaces and fittings and fixtures, such as sinks, worktops and food stores, should be designed, fitted and maintained so that they and the kitchen area can be readily cleansed and maintained in an hygienic condition. All surfaces and fittings in bathrooms and toilet compartments should also be designed, fitted and maintained to facilitate cleaning and the maintenance of hygiene.

Thermal Efficiency – The dwelling should be provided with adequate thermal insulation and a suitable and effective means of space heating so that the dwelling space can be economically maintained at reasonable temperatures.

Assessing Hazards

4.14. Using details of the deficiencies identified which contribute to hazards, the inspector should at least score each hazard which is obviously worse than the average for that age and type of dwelling. To assist in this process it may be useful to list each of the deficiencies contributing to a hazard, then review them during the rating process for that hazard. This process can be repeated for each hazard obviously worse than average.

Hazards from Cold, however, should be scored where they are average or below average.

4.15. To fully assess some hazards, destructive investigations may be necessary, but the inspector may not be in a position to carry these out. In other cases, such as for Excess Cold, Noise, and Radiation, further investigations and measurements may be needed to verify the existence and seriousness of the hazard. For these, a preliminary assessment should be made, with the proviso that verification by measurement or further investigation will be necessary.

4.16. First, after reviewing the deficiencies identified during the inspection that contribute to a hazard, the inspector should assess the likelihood of a member of the vulnerable age group suffering a potentially harmful occurrence in the next twelve months.

Second, the inspector should judge the possible harm outcomes that could result from such an occurrence. (These two stages are described in paras 3.10-3.16 and paras 3.17-3.22 above respectively.)

4.17. The Representative Scale Points are used to reflect the inspector's judgments and a single numerical Hazard Score is generated by the HHRS Formula for that hazard.

4.18. This scoring procedure should be repeated for all hazards that are considered to be worse than average – i.e. where the Hazard Scores are likely to be significantly above the average for the housing stock.

4.19. Finally, the Hazard Band for all the scored hazards should be recorded. These form the first factor in the enforcement decision-making process. Guidance on that process is given in the Enforcement Guidance.

Supplemental Stage for Crowding

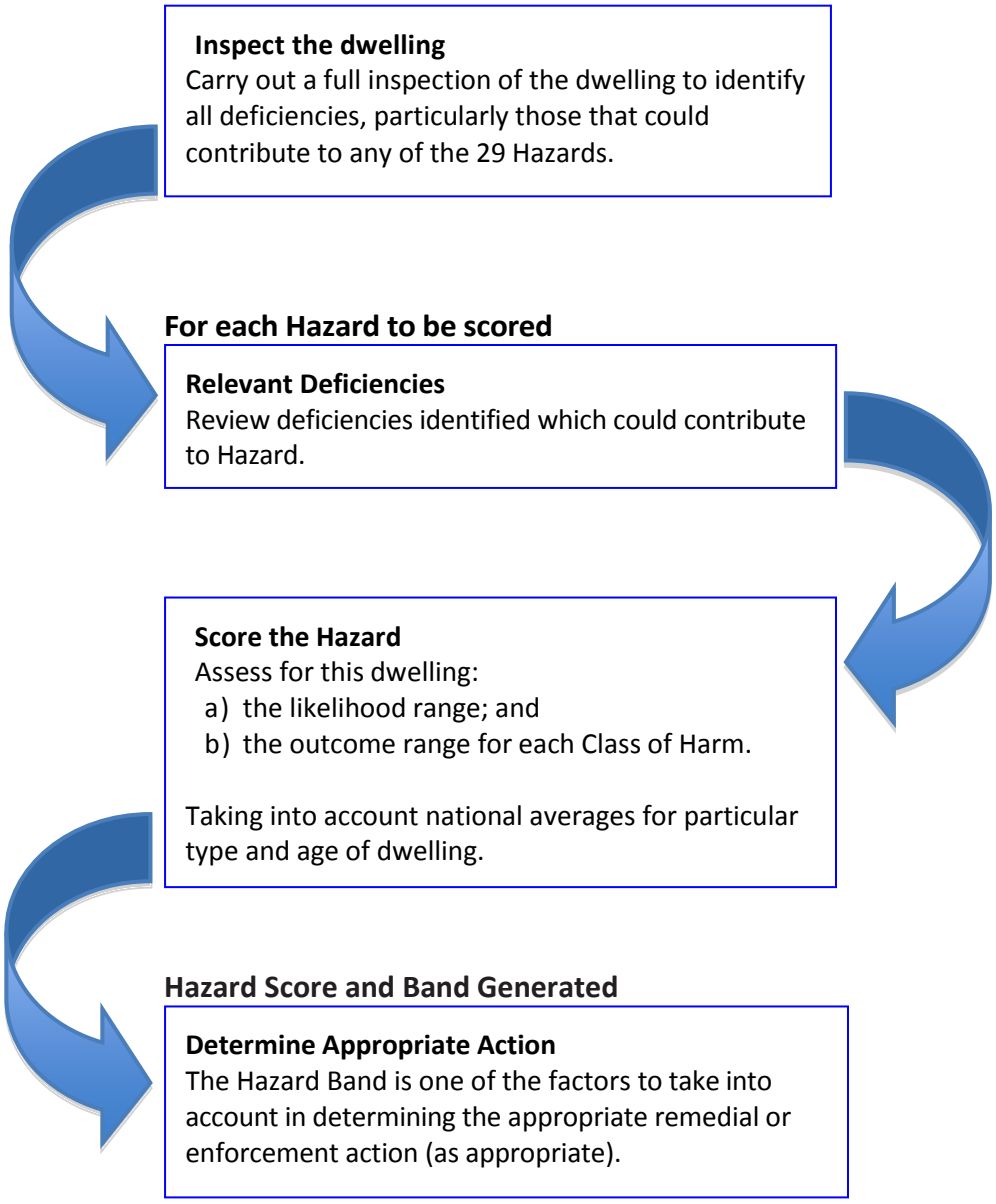
4.20. For all Hazards, the Hazard Score and Band are based on the assessment of the dwelling without taking account of the current occupants (if any). This means that the Scores and Bands relate to the dwelling and so does not vary with a change of occupancy.

4.21. For the assessment of Crowding, which can only occur in an occupied dwelling, a supplemental stage may be necessary to determine whether the dwelling is crowded, and if so, the severity of the Hazard and whether enforcement action should be considered.

Note – The current occupants are taken into account as one of the other factors in the enforcement decision-making process.

4.22. For example, disregarding the current occupants, a two storey house may be assessed as average, having adequate space for sleeping, living and recreation for up to four persons (irrespective of age). This gives a Hazard Score of 22 (Band H). However, if this dwelling is currently occupied by five persons – two parents and their three children – then there is mismatch between the household and the dwelling. In this case, the likelihood of a harmful occurrence should be re-assessed taking account of the current occupation. **For Crowding only**, it is this adjusted Hazard Score and Band which form the first factor in potential enforcement decision-making processes.

Scoring Hazards Schematic



CHAPTER 5
Apartments and Other Dwellings in Multi-Occupied Buildings

Application of HHRS in Multi-Occupied Buildings

5.01. This additional guidance is for the use and application of the HHRS in the case of dwellings in multi-occupied buildings. These are dwellings within a larger building, whether purpose-built or created by conversion, which are:

(a) self-contained;
(b) non-self-contained, where not all rooms are behind one entrance door to the dwelling, but where no facilities or rooms are shared;
(c) non-self-contained, where some rooms are shared (for example dining or living rooms), but where no facilities are shared; and/or
(d) non-self-contained, and where one or more of the following facilities are shared in common with other units within the building, that is:

i. sanitary accommodation;
ii. personal washing facilities;
iii. food storage facilities;
iv. food preparation facilities; and/or
v. food cooking facilities.

5.02. The HHRS has been devised and designed so that it can be applied to any form of dwelling (see paras. 2.04-2.06). This means that any form of dwelling can be assessed, whether it is self-contained or not, and whether it is contained within a larger building or not. To achieve this, it is only necessary to inspect and assess the dwelling and those parts and areas (whether shared or not) that are associated with that unit.

Note – Separate additional guidance is given below for premises where sleeping accommodation is provided in dormitories.

5.03. Assessments using the Rating System, therefore, include:

(a) those rooms and areas of the dwelling which are in exclusive occupation (i.e. not shared in common with others);
(b) any rooms or areas (whether internal or external) which are shared with others;
(c) the means of access to the dwelling; and
(d) the building associated with the dwelling. The assessment does not include any public areas not associated with the building.

Judging Likelihood and Outcomes

5.04. For those rooms and areas that are not shared with others, the assessment is as described above (see paras 4.14-4.19).

5.05. For all rooms and areas shared with others, the assessment should take into account any increase in the likelihood and/or outcomes which could result from the sharing and the degree of that sharing

(i.e. the number of other dwellings sharing the rooms and areas). For example, does that sharing increase the risk of infection, or is it likely to cause stress to an occupant of the dwelling being rated? Guidance on the potential effect of sharing in the individual Hazard Profiles in Annex C. Where data is available, statistical averages are given in the Hazard Profiles for multi-occupied buildings, and these should be used to inform the judgments.

5.06. For the means of access and the building containing the dwelling, the assessment should be related to the potential hazards in those parts and the effect they could have on a potential occupant from the relevant age group in the dwelling being rated.

5.07. Where more than one dwelling in a multi-occupied building is being inspected and rated, then the assessment of the shared rooms and areas, means of access, and the building should be reviewed in relation to the subsequent dwelling(s). There should be no need to re-inspect those parts.

Dormitory Style Accommodation

5.08. For residential premises providing dormitory style sleeping accommodation, it is the whole of the premises that is assessed, taking account of the potential effect the sharing may have on the potential users from the vulnerable age groups. For such accommodation there are no national averages available for the individual hazards, and the assessment must rely on professional judgment.

ANNEXES

CONTENTS

ANNEX A
Inspections for an HHRS Assessment

Introduction

A.1 The purpose for which any inspection or inspection is carried out will have an influence on the detail and information collected. It is therefore, important that the inspector fully understands the HHRS and the information required before undertaking an inspection and ensures that sufficient details are collected both to enable any hazards to be rated and to substantiate the judgments involved in that rating.

A.2 Any decision on enforcement based on the findings from an inspection may affect someone's home and may have financial implications for both the owner and the occupant. As such decisions may be challenged and could be the subject of scrutiny by the courts, any inspection should ensure that sufficient clear information is recorded to substantiate the findings and provide the evidence to support the judgments and decisions. That information should be recorded in a form that is logical and readily understandable, in particular by occupants and owners.

A.3 Assessments using the HHRS should be based on a full inspection of the dwelling, collecting sufficient information on each deficiency and on the dwelling as a whole should be recorded to inform the hazard assessments. In practice, the inspection should ensure that all deficiencies are identified and recorded, whether or not those deficiencies could contribute to a hazard[28].

Conventions

A.4 To promote consistency in the carrying out of inspections and in record keeping, it is recommended that conventions be adopted to ensure no misunderstandings on orientation and room and element locations. To avoid confusion, particularly for those following any requirements based on the inspection or carrying out subsequent inspections, it is good practice to include in any report a statement on the conventions followed to describe rooms and aspects of the dwelling.

Note – A Hazard Scoring Form which can be used for the HHRS assessment on completion of an inspection is provided at the end of this Annex. HUD will develop a HHRS Hazard Scoring program, available for use with handheld computers, tablets, and desktop PCs (MS Windows OS).

Practical Considerations

A.5 Where an inspection is carried out in cooperation with the owner of the building, it may be possible to obtain background and historical information, plans and records. Authority for destructive investigations where necessary should also be obtained, either as a part of the original instructions or if subsequently found necessary.

A.6 Inspections carried out by local authority officers or on the instruction of tenants may not have such benefits. These inspections will usually be carried out without detailed information on materials used in construction, the original construction and in any subsequent alterations. Nor will there be any authority to carry out destructive investigations, which might be the only means of properly identifying the cause or source of a deficiency or hazard. In addition, it may not be possible to remove furniture, furnishings and fittings. Any report or record of inspections carried out under such

restrictions should include a statement to that effect and should identify those matters which would require further investigation to determine the appropriate remedial action or confirm the hazard score.

A.7 An inspection is a snap-shot of the dwelling and its condition at that particular time. Clearly the weather on the particular day and the days prior to the inspection, and the time of year can have a dramatic effect on the conditions in the dwelling. Even to the experienced eye, a dwelling may seem reasonably satisfactory on a warm summer day after a dry spell, but the conditions may be very different on a cold and wet day in winter. These factors should be taken into account during the inspection, and should be noted in any report and, if necessary, included as a qualification to the assessment of the condition.

A.8 It is important to remember that, for the purposes of the HHRS, assessment of the likelihood is judging whether there is likely to be an occurrence during the twelve months following the inspection.

A.9 Although it may not be necessarily relevant for the HHRS assessment, it is suggested that all deficiencies identified are recorded, including those that do not currently, nor could not in the next twelve months, contribute to a hazard. Some deficiencies if left un-remedied could deteriorate to the extent that they would contribute to a hazard.

A.10 The assessment of all hazards is made once the inspection has been completed and details collected of any deficiencies. Also, there are some deficiencies that can only be determined after inspecting the whole of the dwelling. These are matters that relate to the overall size, design or layout of the dwelling. For example, the means of escape in case of fire can only be properly assessed considering the dwelling as a whole; similarly, the number and location of sanitary accommodation and personal hygiene facilities can only be assessed in relation to the whole dwelling.

Inspecting a dwelling in a multi-occupied building

A.11 As well as inspecting the dwelling – i.e. those rooms and areas in exclusive occupation – the number and relative position of other units within the building should be collected and recorded. This should include whether each is residential or nonresidential. General details should also be collected and recorded on the rooms and areas (not yet inspected) that are shared in common with other occupants and users of the building; these should include the passages, corridors, stairs, means of access, means of escape in case of fire, kitchens, bathrooms, shower rooms, toilet compartments, living rooms, and dining rooms.

A.12 Where the dwelling is not self-contained (i.e. some facilities such as kitchen, sanitary accommodation or personal washing facilities, or living or dining rooms, are shared with others), as well as inspecting for deficiencies, details should be recorded of the number of other units the rooms or areas are shared with, and whether those units are residential or non-residential.

A.13 The inspection should include an assessment of all the furnishings and appliances in shared rooms and areas, noting details of any deficiencies, including the nature of the deficiency. Whether or not a deficiency contributes to a hazard, the inspector should indicate whether remedial action, further investigation or no action is appropriate.

A.14 The inspection should also include the internal shared areas. For example:
(a) all those passages, corridors, access balconies, landings and stairs that the occupants (if any) of the dwelling would normally use, in particular those giving access to the dwelling, and those giving access to any shared rooms and facilities associated with that unit;
(b) any lifts giving access to the dwelling and to any shared rooms and facilities associated with that dwelling;
(c) any means of escape in case of fire which could be used by occupants of the dwelling, including any fire detection and alarm systems and any firefighting equipment; and
(d) any refuse storage or disposal system, such as refuse chutes. It may also include other areas that, although not commonly used by the occupants of the dwelling, are accessible and could be used.

A.15 Where meals are provided – e.g. in accommodation such as Bed and Breakfast, Hotels and Guest Houses – then the food storage and preparation areas will be outside the scope of assessment under the Rating System because they are not areas to which the occupant of the dwelling in question has access. However, such areas may be assessed for other purposes and are subject to other requirements.

Inspecting the Exterior, Means of Access, Amenity Space etc.

A.16 As the HHRS relates to the assessment of individual dwellings, it is suggested that the inspection of the exterior of the building containing the dwelling should concentrate first on those parts of the exterior directly associated with the dwelling, including the walls, windows, and where appropriate, the roof. This stage should also include the external means of access, refuse storage and amenity space associated with the dwelling.

A.17 The second stage should be an inspection of the exterior of the remainder of the building containing the dwelling.

A.18 As noted above (para B.10) there are some deficiencies that can only be assessed once the whole of the dwelling and the building containing the dwelling have been inspected. These are matters that relate to the overall size, design or layout of the dwelling and of the building. For example, the means of escape in case of fire can only be properly assessed considering the dwelling and building as a whole and the location of the dwelling within the building. Similarly, in multi-occupied buildings, the number and location of sanitary accommodation and personal hygiene facilities can only be assessed in relation to the number of units within the building and the location of those facilities in relation to the dwelling.

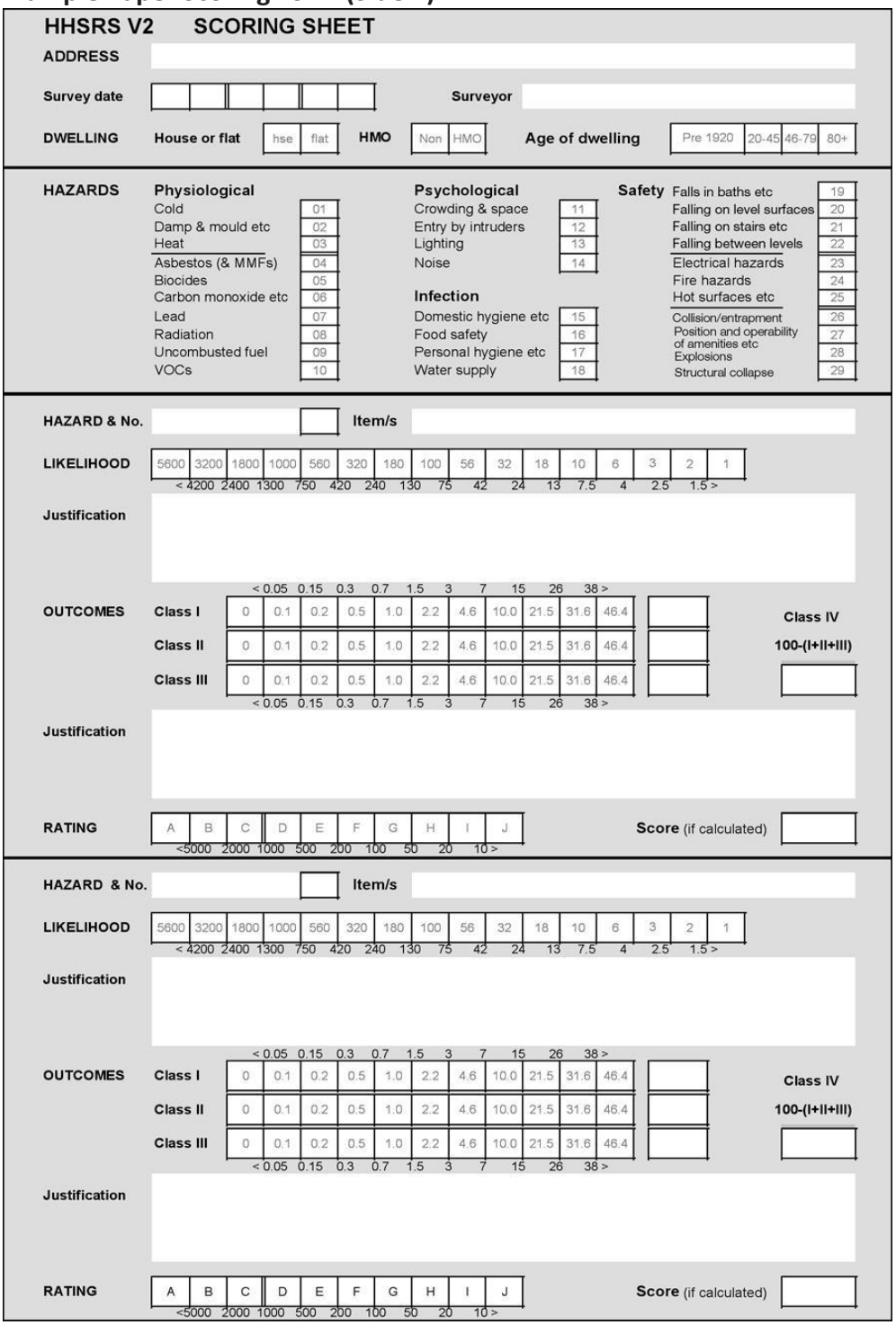
Note – Where more than one dwelling in the building is to be inspected, it should be unnecessary to duplicate the inspection of the shared rooms and areas, and the exterior etc. However, the inspection of the exterior and the consideration of whole dwelling and building deficiencies will need to reflect the location of each dwelling within the building.

Inspecting premises with dormitory accommodation

A.19 For residential premises where accommodation is of a non-exclusive basis – i.e. occupants are not granted exclusive occupation of a room or rooms, and sleeping accommodation is provided in dormitories – the whole of the premises should be inspected as for a single household occupied house.

A.20 In such cases the consideration of facilities and whole building deficiencies should take account of the number of persons the premises is capable of accommodating.

Example Paper Scoring Form (Side 1)



HHSRS V2 SCORING SHEET

ADDRESS

Survey date | **Surveyor**

DWELLING — **House or flat**: hse | flat — **HMO**: Non | HMO — **Age of dwelling**: Pre 1920 | 20-45 | 46-79 | 80+

HAZARDS

Physiological		Psychological		Safety	
Cold	01	Crowding & space	11	Falls in baths etc	19
Damp & mould etc	02	Entry by intruders	12	Falling on level surfaces	20
Heat	03	Lighting	13	Falling on stairs etc	21
Asbestos (& MMFs)	04	Noise	14	Falling between levels	22
Biocides	05			Electrical hazards	23
Carbon monoxide etc	06	**Infection**		Fire hazards	24
Lead	07	Domestic hygiene etc	15	Hot surfaces etc	25
Radiation	08	Food safety	16	Collision/entrapment	26
Uncombusted fuel	09	Personal hygiene etc	17	Position and operability of amenities etc	27
VOCs	10	Water supply	18	Explosions	28
				Structural collapse	29

HAZARD & No. | **Item/s**

LIKELIHOOD

5600	3200	1800	1000	560	320	180	100	56	32	18	10	6	3	2	1
< 4200	2400	1300	750	420	240	130	75	42	24	13	7.5	4	2.5	1.5 >	

Justification

OUTCOMES

	< 0.05	0.15	0.3	0.7	1.5	3	7	15	26	38 >	
Class I	0	0.1	0.2	0.5	1.0	2.2	4.6	10.0	21.5	31.6	46.4
Class II	0	0.1	0.2	0.5	1.0	2.2	4.6	10.0	21.5	31.6	46.4
Class III	0	0.1	0.2	0.5	1.0	2.2	4.6	10.0	21.5	31.6	46.4

Class IV 100-(I+II+III)

Justification

RATING

A	B	C	D	E	F	G	H	I	J
<5000	2000	1000	500	200	100	50	20	10 >	

Score (if calculated)

HAZARD & No. | **Item/s**

LIKELIHOOD

5600	3200	1800	1000	560	320	180	100	56	32	18	10	6	3	2	1
< 4200	2400	1300	750	420	240	130	75	42	24	13	7.5	4	2.5	1.5 >	

Justification

OUTCOMES

	< 0.05	0.15	0.3	0.7	1.5	3	7	15	26	38 >	
Class I	0	0.1	0.2	0.5	1.0	2.2	4.6	10.0	21.5	31.6	46.4
Class II	0	0.1	0.2	0.5	1.0	2.2	4.6	10.0	21.5	31.6	46.4
Class III	0	0.1	0.2	0.5	1.0	2.2	4.6	10.0	21.5	31.6	46.4

Class IV 100-(I+II+III)

Justification

RATING

A	B	C	D	E	F	G	H	I	J
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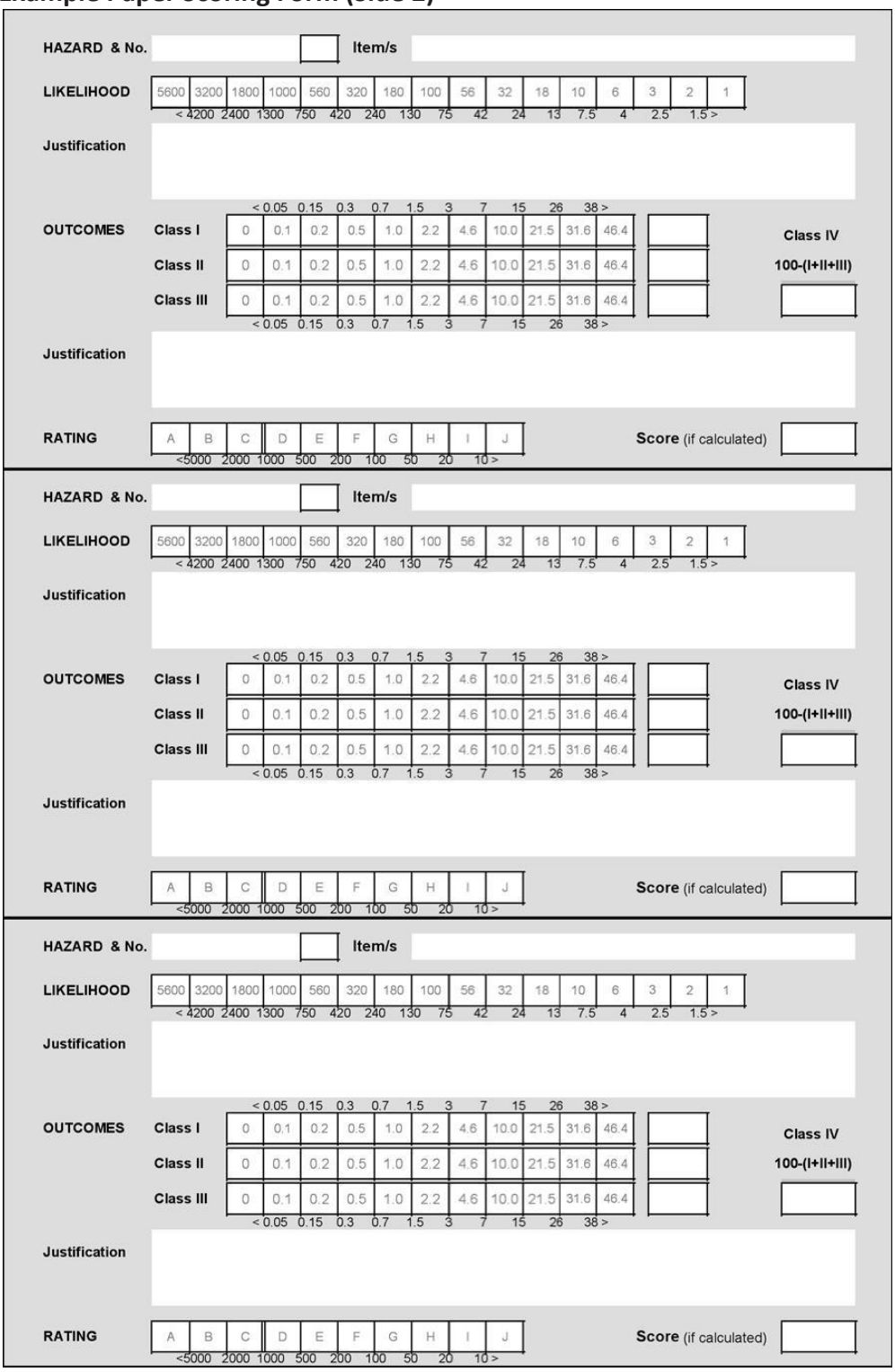
Score (if calculated)

Example Paper Scoring Form (Side 2)



HAZARD & No. ____ Item/s ____

LIKELIHOOD

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Justification

OUTCOMES

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Class III	0	0.1	0.2	0.5	1.0	2.2	4.6	10.0	21.5	31.6	46.4

Class IV 100-(I+II+III)

Justification

RATING

A	B	C	D	E	F	G	H	I	J
<5000	2000	1000	500	200	100	50	20	10 >	

Score (if calculated)

HAZARD & No. ____ Item/s ____

LIKELIHOOD

5600	3200	1800	1000	560	320	180	100	56	32	18	10	6	3	2	1
< 4200	2400	1300	750	420	240	130	75	42	24	13	7.5	4	2.5	1.5 >	

Justification

OUTCOMES

	< 0.05	0.15	0.3	0.7	1.5	3	7	15	26	38 >	
Class I	0	0.1	0.2	0.5	1.0	2.2	4.6	10.0	21.5	31.6	46.4
Class II	0	0.1	0.2	0.5	1.0	2.2	4.6	10.0	21.5	31.6	46.4
Class III	0	0.1	0.2	0.5	1.0	2.2	4.6	10.0	21.5	31.6	46.4

Class IV 100-(I+II+III)

Justification

RATING

A	B	C	D	E	F	G	H	I	J
<5000	2000	1000	500	200	100	50	20	10 >	

Score (if calculated)

HAZARD & No. ____ Item/s ____

LIKELIHOOD

5600	3200	1800	1000	560	320	180	100	56	32	18	10	6	3	2	1
< 4200	2400	1300	750	420	240	130	75	42	24	13	7.5	4	2.5	1.5 >	

Justification

OUTCOMES

	< 0.05	0.15	0.3	0.7	1.5	3	7	15	26	38 >	
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Class III	0	0.1	0.2	0.5	1.0	2.2	4.6	10.0	21.5	31.6	46.4

Class IV 100-(I+II+III)

Justification

RATING

A	B	C	D	E	F	G	H	I	J
<5000	2000	1000	500	200	100	50	20	10 >	

Score (if calculated)

ANNEX B
Examples for the Four HHRS Classes of Harm

B.1 The Classes of Harm used for the HHRS are based on the top four Classes of Harm as identified in *A Risk Assessment Procedure for Health and Safety in Buildings, UK* (2000) Building Research Establishment (BRE). While this work identified seven Classes of Harm, only the top four are used for the purposes of the HHRS as these are harms of sufficient severity that they will either prove fatal or require medical attention and, therefore, are likely to be recorded in hospital admissions or physician records.

B.2 Work on developing and refining the Statistical Evidence supporting the Rating System involved classifying a more comprehensive list of harm outcomes.

B.3 The examples given below are intended for guidance only. It should be noted that some of the harm outcomes may appear in more than one Class depending on the severity of the condition. For example, respiratory disease will be in Class II or III depending on the severity and duration.

Class I
This Class covers the most extreme harm outcomes including: Death from any cause; Lung cancer; Mesothelioma and other malignant lung tumors; Permanent paralysis below the neck; Regular severe pneumonia; Permanent loss of consciousness; 80% burn injuries.

Class II
This Class covers severe harm outcomes, including: Cardio-respiratory disease; Asthma; Non-malignant respiratory diseases; Lead poisoning; Anaphylactic shock; Crytosporidiosis; Legionnaires disease; Myocardial infarction; Mild stroke; Chronic confusion; Regular severe fever; Loss of a hand or foot; Serious fractures; Serious burns; Loss of consciousness for days.

Class III
This Class covers serious harm outcomes, including: Eye disorders; Rhinitis; Hypertension; Sleep disturbance; Neuro-pyschological impairment; Sick building syndrome; Regular and persistent dermatitis, including contact dermatitis; Allergy; Gastro-enteritis; Diarrhea; Vomiting; Chronic severe stress; Mild heart attack; Malignant but treatable skin cancer; Loss of a finger; Fractured skull and severe concussion; Serious puncture wounds to head or body; Severe burns to hands; Serious strain or sprain injuries; Regular and severe migraine.

Class IV
This Class includes moderate harm outcomes that are still significant enough to warrant medical attention. Examples are: Pleural plaques; Occasional severe discomfort; Benign tumors; Occasional mild pneumonia; Broken finger; Slight concussion; Moderate cuts to face or body; Severe bruising to body; Regular serious coughs or colds.

ANNEX C[8]

Profiles of potential health and safety hazards in dwellings

Introduction

There are 29 hazards. These are arranged in four main groups reflecting the basic health requirements. The four groups are sub-divided according to the nature of the hazards. The profiles provide a summary of information to assist in the assessment of hazards. It is assumed that practitioners using the HHRS for enforcement purposes will have a broad understanding of the relationship between housing and health, and will have read widely around the relevant subject area. Practitioners are also expected to keep up to date with developments, including any changes to the standards relevant to the 'Ideal', and any new research findings. Each hazard is profiled under the following headings:

- *Description of the hazard* – This defines the hazard, specifying what is included and what is excluded.
- *Potential for harm* – This sets out how the hazard can affect health, outlining typical illnesses or injuries that may result from exposure to the hazard. The prevalence of the hazard, and typical numbers of people affected nationally each year, are identified.

HAZARD GROUPS AND SUB-GROUPS

A Physiological Requirements including – Hygrothermal conditions and Pollutants (non-microbial)

B Psychological Requirements including – Space, Security, Light, and Noise

C Protection against Infection including – Hygiene, Sanitation, and Water supply

D Protection against Accidents including – Falls, Electric shock, Burns and Scalds, and Building related Collisions

The national statistical averages for the likelihood and spread of harms are given in a table, together with the average hazard scores. For all hazards these are the national averages for a specified age group of the population living in all dwellings of a stated age and type. Although theses averages are derived from UK statistics, they may prove useful in establishing a starting point for the American assessor. As always, local housing conditions vary and will not be entirely consistent from one region to the next. Assessors are encouraged to share their experience in local peer-to-peer networks.

The statistical averages have been calculated for the age range of the population most vulnerable to that particular hazard. This age group is identified, and it is this vulnerable age group that is to be considered when assessing the hazard. For some hazards no age group is more vulnerable than others, and for these the statistics relate to the total population of the United States.

The averages are given for up to eight different ages and types of dwellings, and for all dwellings.

[8] Annex C and D are incorporated from the HHSRS Operating Guidance (originally as Annex D and Annex E) – original page numbering is retained.

Generally, the average likelihood is statistically significant for each of the eight dwelling ages and types, being based on a large sample of the vulnerable population in such dwellings. However, where the likelihood is low the sample of occurrences is sometimes too small to provide an accurate spread of harms. In these cases, the average outcomes are given for all flats or, where samples are particularly small, for all dwellings.

The strength of the evidence for the statistical averages is indicated, together with any note of where there might be over or under estimation in the national averages given.

- *Causes:* – This section discusses potential sources of the hazard. Where multi-occupation could have an impact on the causes and possible severity of the hazard this is also identified. It also discusses the contribution to a hazard that could be attributed to dwelling features and to human behavior. This should assist in assessing whether the deficiencies identified could mean that the likelihood or spread of harms deviates from the averages for the particular age and type of dwelling.
- *Preventive measures and the Ideal:* – This gives an indication of measures and the optimum standard intended to avoid or minimize the hazard. This is usually based on British Standards or relevant UK Building Regulation Approved Documents. Where there is no appropriate UK guidance, reference is made to international standards.
- *Relevant matters affecting likelihood and harm outcome:* – A check-list of dwelling features which may affect the likelihood and the severity of the outcome is given. In many cases the same features can affect both the likelihood and the severity of the outcome. Where different dwelling features affect the likelihood and spread of harm outcomes, the lists are given separately.
- *Hazard assessment:* – Where appropriate, this gives advice to supplement the relevant matters. Any differences in the assessment relevant to multi-occupied buildings are identified.

Pages 36-50 left blank. Pages 51 and beyond are taken from the Housing Health and Safety Rating System (HHSRS) Operating Guidance in full. References to the HHSRS are intentional.